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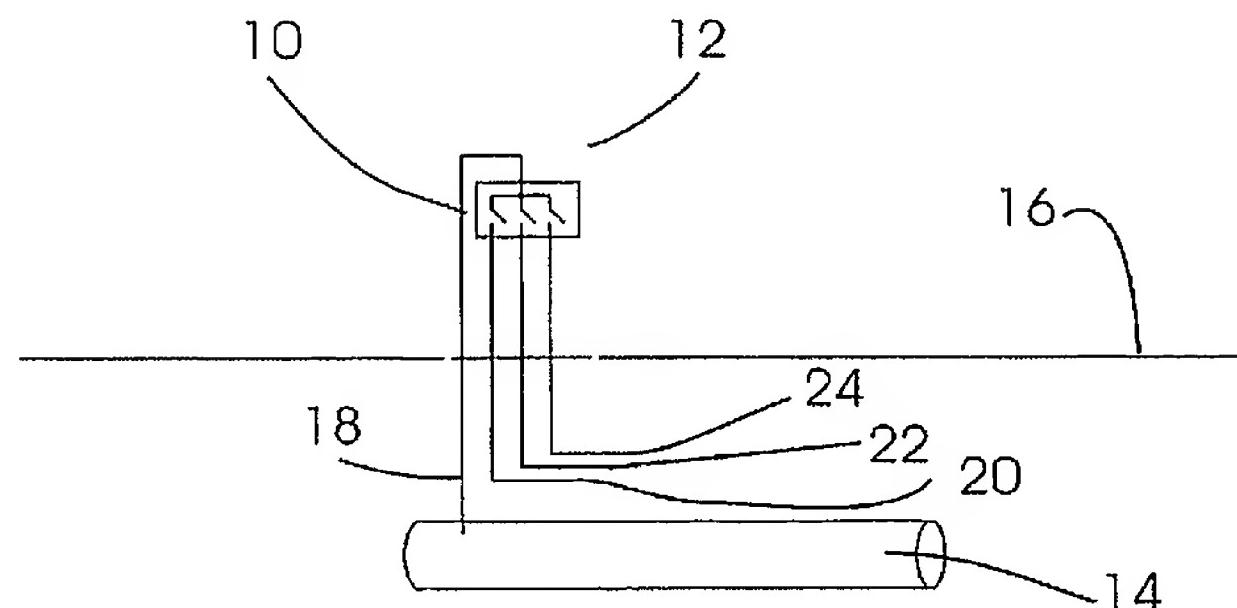
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(54) Title: A METHOD AND A SYSTEM OF DIAGNOSING CORROSION RISK OF A PIPE OR A PIPELINE IN SOIL



**WO 2005/083392 A1** (57) **Abstract:** The invention relates to a method of diagnosing corrosion risk of a pipe or a pipeline buried in soil due to DC stray currents and/or AC voltages induced in the soil. The method comprises the provision of a two-part metal probe including a first probe part having a first metal element of a first size and a first specific resistivity, the first probe part constituting an exposed element, and a second probe part having a second metal element of a second size and a second specific resistivity, the second probe part being hermetically sealed and constituting a reference element, burying the two-part metal probe in the soil, measuring the AC current flowing between the pipe or the pipeline and the two-part metal probe, measuring the AC voltage between the pipe or the pipeline and the two-part metal probe, and measuring the spread resistance based on the AC current and the AC voltage according to Ohm's Law. The method further comprises passing a first excitation current through the first probe part and determining the voltage generated by the first excitation current across the first probe part for measuring the resistance of the first probe part according to Ohm's Law, passing a second excitation current through the second probe part and determining the voltage generated by the second excitation current across the second probe part for measuring the resistance of the second probe part according to Ohm's Law, storing the measurements and repeating the steps periodically. Even further, the method comprises the determination of the corrosion of the first probe part based on the measurements performed according to a mathematical corrosion algorithm, and diagnosing the risk of corrosion of the pipe or pipeline based on an empirical combination of the actual corrosion of the first probe part, the spread resistance and the AC voltage measured.